

VICTOR HASSELBLAD AB SERVICE TEST SYSTEM

USER INSTRUCTION

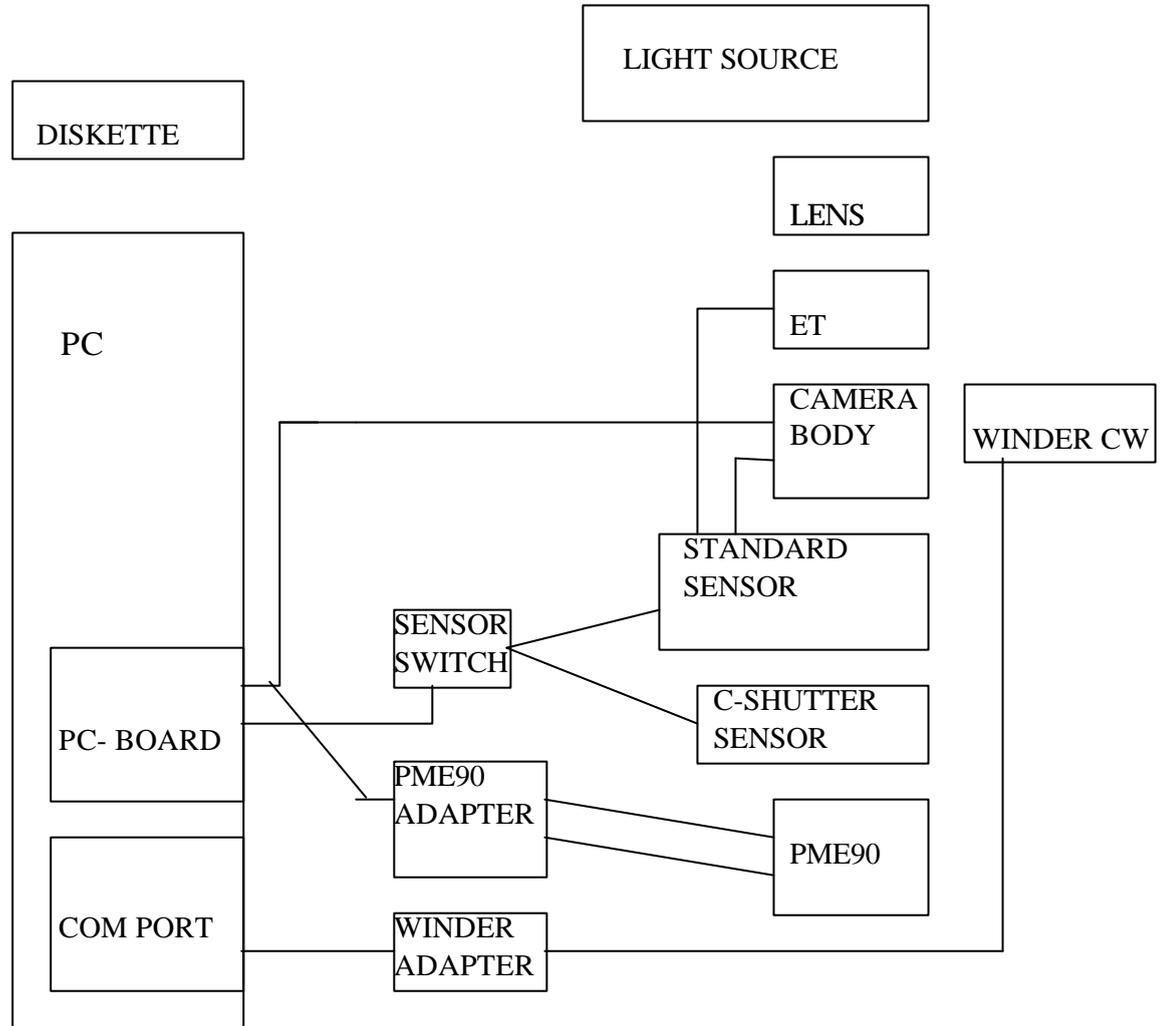
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1

GENERAL

The Service Test System has been developed for testing the 200 cameras in Hasselblad authorised service centres. In addition it can be used for testing some functions on the 500 and 2000 cameras, on the winder CW and on the PME viewfinders.



<u>Components</u>	<u>VHAB No.</u>	<u>Remarks</u>
Diskette	970 663	
PC-board	970 630	
Standard sensor	970 610	
Protective cover	633 83	
ET (extension tube)	903 711	ET to sensor
Battery comp. cable	970 649	PC-board to camera
Sensor cable	970 648	PC-board to sensor
Sync. cable	550 34/23	Sensor to camera
Light source		

PC		
Lens FE80		
Lens CF80		
C-shutter sensor*	970 940	
Sensor switch*	970 999	
Sensor switch cable*		2 pcs 25 p D-sub f-f (to sensor)
Sensor switch cable*		25 p D-sub f-m (to PC)
Winder adapter*	970 995	
Winder test cable*		3,5 mm stereo m-m
Winder adapter cable*		9 p D-sub f-m (to PC)
Winder COMport adapter*		9 p m - 25 p f D-sub
PME90 adapter*	971 006	
Incident light tube*	905 018	
PME90 test cable*	971 007	
PME90 battery cable*	971 008	
PME45 test cable*	971 155	

* *option*

PC and light source to be procured by the service centre. Other components supplied by Victor Hasselblad AB.

The diskette is supplied in 5.25" format alternatively 3.5" format.

PC to be IBM PC/XT/AT or compatible.

Light source to be stabilised and to provide at least LL 12/LV 15.

Handle the equipment with care. Always store the sensor with the protective cover fitted.

2 **GETTING STARTED**

2.1 **Cables**

Connect the following cables:

- 25-lead cable between the PC-board and the sensor
- battery comp. cable to the PC-board
- sync. cable to the sensor
- extension tube cable to the sensor

2.2 **From diskette**

Insert the diskette into drive A and turn on the unit. The program will start automatically.

2.3 **From hard disk**

Copy the file VHABSTS.EXE and all .STS files* from the diskette onto the hard disk. Run the file in order to start the program.

* *Files named ADDRn.STS contain data for testing the Winder CW.
Each file is unique for a software revision of the winder (n = rev.number).*

2.4 **When the program starts**

The program will start with a system test. When in order the following will be displayed:

```

                                     Welcome to
                                     Hasselblad Service Test System

SELF TEST

parallel                             passed
power and adc                         passed
timer                                 passed
i2c communication                     passed
fifo                                  passed
flash                                 passed
test back                             passed

SELF TEST PASSED
```

2.5 Select light source

If light source information has not previously been saved on the diskette (or hard disk) the following will be displayed.

HASSELBLAD STS	
LIGHT SOURCE	
Spectron CE 388/260	
Kyoritsu EF 8000/511/500	
Tsubosaka LSB-58	
Spectron CE 241	
Hasselblad 905138	

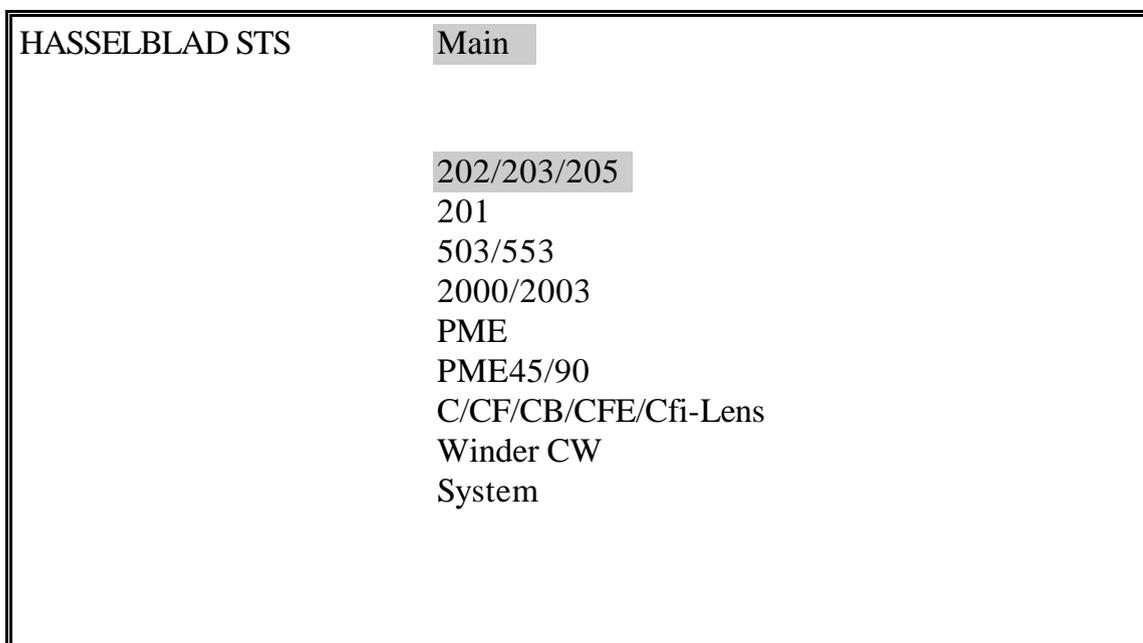
Select light source type by pressing ↓ or ↑ and then ↵ (ENTER).

The information can be saved for next start up using "SAVE SETTING" under System menu, see 13.6.

NOTE! Consult Victor Hasselblad AB, Technical Support Department before using any other type of light source.

3 **MAIN MENU**

When the system has been started the main menu will appear on the screen (MAIN).



Select function (camera model) by pressing ↑ or ↓ and then ↵ (ENTER).

If "ERROR" appears on the screen, please refer to par. 14 "Messages".

4 HASSELBLAD 202FA, 203FE AND 205TCC/FCC

4.1 Basic set-up

Fit the lens FE80 and the sensor on the camera body. Connect the battery comp. cable and the sync. cable to the camera body. Put the camera in front of the light source.

NOTE! The lens must be on ∞ . Check that the lens does not have any part of an aperture blade visible at full aperture. Also minor shading can cause considerable errors.

4.2 Adjustment of light level for the light source

Before testing shutter speed, flash sync and C-position the light source must be set at a light level to fit the sensor. When any of these tests is selected the screen will display:

Is the lightbox adjusted ? [Y]

Press N for No (or Y for Yes if the light level has already been set). Pre-release the camera. Increase or decrease the light level until

Light level OK. Press any key to continue

is displayed on the screen.

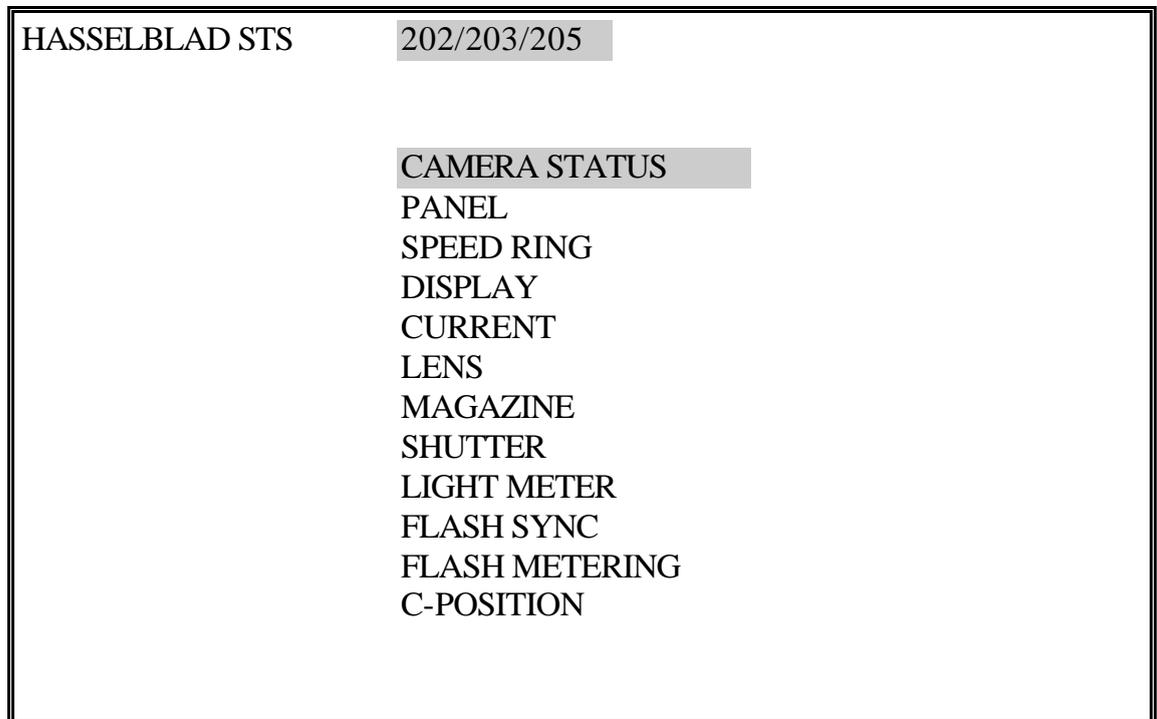
Alternatively, use the LED-indicators on the sensor:

Only red LED lit	<u>L</u> ow light level
Both green and red LED lit	Correct light level
Only green LED lit	<u>H</u> igh light level

Note that the aperture must be set before adjusting the light level.

4.3 202/203/205 Menus

When "202/203/205" has been selected the menu for 202FA/203FE/205TCC/205FCC will appear on the screen.



Select function in the same way as in main menu. The system will automatically recognise if a 202FA, 203FE or 205TCC/FCC is connected.

Press ESC to get back to the main menu.

Functions "SHUTTER", "LIGHT METER", "FLASH SYNC", "FLASH METERING" and "C-POSITION" require the light source.

End any function by pressing ESC.

4.4 "CAMERA STATUS"

Connect the battery comp. cable to the camera body or use the basic set-up.

This function is a help for trouble-shooting. The camera is in test mode, i.e. the electrical devices do not work as in normal operation. Therefore the C-position should be used for 203 and 205. For 202 curtain release is controlled from the test system. This will cause a noticeable delay compared to normal function. Position of camera "switches" are displayed on the screen. Normal position, i.e. camera tensioned, is displayed with normal characters (blue). Opposite position is displayed with bold characters (red).

Example

CAMERA STATUS

Home position switch	closed	(Home)
Front key switch	closed	
Late release switch	open	
First curtain sync switch	open	(Active)
Second curtain sync switch	closed	
Pressure point switch	open	
Pre-release switch	open	
Exposure lock switch	closed	(Pressed)
View finder switch	open	(PM or PME)

NOTE:

Normal function only with speed ring in C-position.

When the camera is tensioned the release mechanism of the first and second curtain may be tested by pressing F1 (first) and F2 (second).

4.5 "PANEL", Buttons left side of camera

Connect the battery comp. cable to the camera body or use the basic set-up.

Select "PANEL".

Turn the mode selector, press the adjustment buttons and the backlighting button. A correct change is indicated by a short beep. Erroneous change is indicated by a long beep and "ERROR" appearing on the screen. Check that the corresponding positions of the buttons are indicated on the screen.

Example

PANEL

A	Pr	D	Z	M	Z	ERROR	Pr
none	^	none	∨	none	bl		

4.6 "SPEED RING" (only for 203 and 205)

Connect the battery comp. cable to the camera body or use the basic set-up.
Select "SPEED RING".

Testing the speed ring.

Turn the speed ring from C to 1/2000s and back. A correct change is indicated by a short beep. Erroneous change is indicated by a long beep and "ERROR" appearing on the screen. Every new value will appear on the screen. Check that the correct setting is activated each time.

Example

SPEED RING

C	B	1	0.7	2	3	4	6	8
10	15	20	30	45	60	90	125	180
250	350	500	750	1000	1500	2000	1500	1000
750	ERROR	350	250					

4.7 "DISPLAY"

Connect the battery comp. cable and the sync. cable to the camera body or use the basic set-up.

Select "DISPLAY".

A number of test patterns will appear on the screen. Change of pattern is done with the control keys.

Compare patterns with enclosure 1.

Example

DISPLAY

all segments lit

pattern 1

pattern 2

display off

flash indicator lit

triangle lit

background illumination lit

self timer indicator lit

4.8 "CURRENT", Consumption, drain

Connect the battery comp. cable to the camera body.
The camera must not be activated during test.

Select "CURRENT".

The current consumption during operation and the leakage current during rest are shown on the screen. (Can be repeated by pressing ↵.) Wait until the current drain is stabilised. Quit by pressing ESC.

Example

CURRENT CONSUMPTION

Do **not** activate the camera.

On **11.3** mA at **5.6** V

Off **12.8** uA at **5.6** V

measure

4.9 "LENS"

Connect the battery comp. cable or use the basic set-up without lens.

Adapt the lens to be tested.

Select "LENS".

Turn the aperture ring from smallest to largest aperture and back. Press the stop down knob and release it again. A correct change is indicated by a short beep. Erroneous change is indicated by a long beep and "ERROR" on the screen. Every new value will appear on the screen. Check that the correct setting is activated each time.

Example

LENS

max. ape. 2.8

2	2.4	2.8	3.4	4	4.8	5.6	6.8	8	9.5
11	13	16	19	22	19	ERROR	13	11	

normal stop-down normal

4.10**"MAGAZINE"**

Connect the battery comp. cable to the camera body or use the basic set-up without the sensor.

Adapt the magazine to be tested.

Select "MAGAZINE".

Turn the ISO dial and the film contrast dial from 12 to 6400 and from -4 to +3 respectively and back again. A correct change is indicated by a short beep. Erroneous change is indicated by a long beep and "ERROR" on the screen. Every new value will appear on the screen. Check that the correct setting is activated each time.

Example

MAGAZINE

12	16	20	25	4000	ERROR	6400	5000
4000	20	16	12				

-4	-3	-2	-1	0	+1	+2	+3	+2	+1	0	-1	-2
-3	-4											

4.11 **"SHUTTER", Speeds and travel time**

Use the basic set-up.
 Adjust the light source (ref. to 4.2).
 Set aperture for testing as indicated on the screen.
 Select "SHUTTER". Camera in manual mode.

Select a shutter speed.
 Release and tension camera again.

The values are shown on the screen.

Example

SHUTTER

	Camera		
	Left	Centre	Right
Shutter speed	4.21 ms	4.03 ms	4.10 ms
Deviation	0.11 EV	0.04 EV	0.07 EV
Travel time 1	10.06 ms		
Travel time 2	10.20 ms		

Nominal shutter speed 250 (3.91 ms)

Tension the camera

4.12 **"LIGHT METER"**

Use the basic set-up.
 For 205 select an optional aperture.
 For 202/203 select max. aperture (2.8)
 Stop down manually.
 Set the light source on an optional LL/LV.
 Set the speed ring in time setting.
 Focusing hood to be closed.
 Select "LIGHT METER". Camera in manual mode.
 Release the camera. Measured light value with deviation will appear on the

4.15 **"C-POSITION" (only for 203 and 205)**

NOTE! Use a CF80 lens (Note 1).

Use the basic set-up with the extension tube fitted.

Set the light source (ref. 4.2)

Set the lens shutter in position F.

Set aperture for testing as indicated on the screen (Note 2).

Set the speed ring at C.

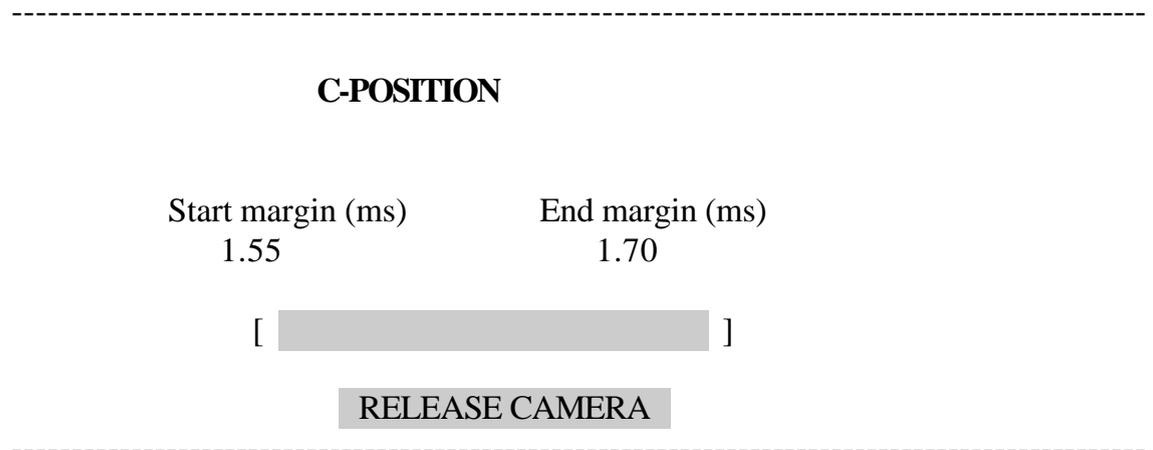
Select "C-POSITION".

Release and tension the camera.

The result is given on the screen.

The shadowed field indicates the time of 1st shutter blind to open. The time, when C/CF shutter is closed before exposure, is indicated by "[" and "]" respectively. For correct exposure the opening time of the 1st curtain must be within the limits of the two brackets. (Start and End margin must have positive values).

Example



Note 1. The result of the measurement is influenced by rotation speed of the CF 80 lens key. Compare regularly the lens being used for adjustments with other lenses. Repair (or replace) the lens if it doesn't show average properties in regard to speed and resistance of the key mechanism. To be on the safe side, it is recommended to use the customer lens when checking/adjusting. Use max. aperture if the recommended aperture can not be set.

Note 2. A larger aperture may be used if the light source does not give a sufficient light level.

4.16 Special functions

Power supply, F5

In the lower right corner the selected power supply to the camera is shown.

Press F5 to change the voltage.

Nominal voltage, 5.5 V

High voltage, 6.3 V

Low voltage, 3.9 V

Status of camera software, F6

Pressing F6, when in the 202/203/205 menu, checks the camera software status. Result (which revision) will be given in upper right screen corner.

Average value, F4

This function can be used when measuring shutter speeds, travel time and C-position.

Press the button F4. "Average RESET" is shown on the screen. Make an optional number of camera releases. The screen will continuously show average values.

Press F4 to reset and once more to quit the average value function. When shutter speeds are measured reset will follow automatically if the shutter speed ring is turned.

5 HASSELBLAD 201F

5.1 General

The Service Test System can be used to test camera status, speed ring, timer indicator, current consumption, shutter speeds, flash sync and C-position basically in the same way as for 202/203/205.

Flash metering and viewfinder signal are tested as for 503CX/553ELX.

Note however some differences as described below.

Also note that a communication error may occur when tensioning the camera very fast. This is due to the fact that the camera electronics, to extend battery lifetime, is turned off directly after each exposure. Tensioning a little bit slower will give the test system enough time to restart the camera and the error will be avoided.

5.2 Basic set-up

As for 202/203/205 ref. to par. 4.1

5.3 Adjustment of light level for the light source

As for 202/203/205 ref. to par. 4.2

Note however that the speed ring must be set to C.

5.4 "CAMERA STATUS"

As for 202/203/205 ref. to par. 4.4

Note that some of the 202/203/205 switches are excluded in the 201F.

5.5 "SPEED RING"

As for 203/205 ref. to par. 4.6

5.6 "TIMER INDICATOR"

Connect the battery comp. cable to the camera body or use the basic set-up.

Select "TIMER INDICATOR".

The timer indicator on the camera front shall light.

Press any key to return to menu.

5.7 "VIEWFINDER SIGNAL"

As for CX/CW/ELX ref. to par. 6.3

5.8 **"CURRENT"**

As for 202/203/205 ref. to par. 4.8

5.9 **"SHUTTER"**

As for 202/203/205 ref. to par. 4.11

5.10 **"FLASH SYNC"**

As for 202/203/205 ref. to par. 4.13

5.11 **"FLASH METERING"**

As for CX/CW/ELX ref. to par. 6.2

5.12 **"C-POSITION"**

As for 203/205 ref. to par. 4.15

6 HASSELBLAD 503CX/CW, 500/553ELX, 555ELD**6.1 Basic set-up**

Fit the sensor and a lens onto the camera. Connect the sync. cable and put the camera in front of the light source.

NOTE! LENS on ∞

6.2 "FLASH METERING"

Select "FLASH METERING".
 Set the lens aperture at 4.
 (Lens in F-mode if a CF lens is used).
 Set the light source at an optional light level.
 Pre-release the camera.

The ISO-value is chosen with the arrow buttons. NOTE that camera must be set at corresponding ISO-value.

Press  to measure.

Light level and exposure deviation are shown. * indicates the light level measured related to total metering range at the camera system at ISO value set.

Note that a positive deviation will result in the film being underexposed.

Example

FLASH METERING

NOTE! ISO dial must be set to corresponding value

ISO	16	20	25	32	40	50	64	80	100	125
	160	200	250	320	400	500	640	800	1000	1250
	1600	2000	2500	3200	4000					

Light level **11.5** LL at f4
 Deviation **-0.11** EV

*

[-----]
 Dark Bright

PRESS  (ENTER)

6.3 **"VIEWFINDER SIGNAL"**

Select "VIEWFINDER SIGNAL".

Check that the signal diode is flashing.

Press any key to return to menu.

7 HASSELBLAD 2003FCW, 2000FCW/FCM

7.1 General

The Service Test System can be used for testing shutter speeds and C-position. Basically this can be done in the same way as for the 202/203/205. However, there are some differences, mainly due to the fact that the test system can not read camera settings from the battery compartment.

7.2 Basic set-up

Fit the lens F80 and the sensor on the camera body. Put the camera in front of the light source.

NOTE! The lens must be on ∞

7.3 Adjustment of light level for the light source

As for 202/203/205, ref. to par. 4.2.

7.4 "SHUTTER"

As for 202/203/205, ref. to par. 4.1 1 with the following differences:

Deviation (EV) is calculated from nearest half step. Note that this may differ from the speed ring setting. If so, the difference must be added to give correct deviation.

Example:

Speed ring setting is 1/2000 s. Measured deviation is -0.20 EV from 1/1500 s.

Deviation from 1/2000 is 0.5 EV - 0.2 EV = +0.3 EV.

When using the average function (ref. 4.16) there will not be an automatic RESET when turning the speed ring.

7.5 "C-POSITION"

As for 203/205, ref. to par. 4.15 with the following difference:

There will be no warning on the screen if light level is low or high. Low light level will result in no response from the test system. High light level will result in a minor measure error.

NOTE! A CF-lens must be used.

8 **HASSELBLAD PME3/5/51**

8.1 **Basic set-up**

Fit the PME, the sensor and an CF80 or F80 lens onto a 500 or 2000 camera body. Put the camera in front of the light source.

NOTE! * Use an Acute-Matte focusing screen for PME3 and PME5.
 * Using a 202/203/205 camera body will give an error of approx. 0.1 EV due to the partially transparent mirror and is therefore normally not recommended.

NOTE! Lens on ∞

8.2 **"LIGHT METER"**

Select "LIGHT METER".

Set the lens aperture at 2.8 (max.).

Set lens/camera to B (or C).

Set the light source at an optional light level.

Select an optional ISO and fmax value on the PME.

Use the arrow keys to set ISO and fmax on the screen at the same values.

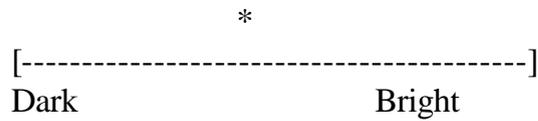
Press the camera release button and keep pressed to measure the light level of the light source. Each measurement is indicated by a short beep and corresponding EV is displayed on the screen. Release the button after the first beep or keep pressed to make continuous measurements while adjusting the light level.

When the button has been released and the camera has been tensioned, the display of the PME may be read and compared with the reading on the screen. For optimum result the two readings should be equal.

Repeat for different settings of the ISO/fmax dial. The lens, however, must always be kept on its max. aperture.

Example

fmax: LIGHT METER										
2										
2.4	Note ! ISO/fmax dial must be set to corresponding value									
2.8										
3.4	ISO:									
4	25	32	40	50	64	80	100	125	160	200
4.8	250	320	400	500	640	800	1000	1250	1600	2000
5.6	2500	3200	4000	5000	6400					
6.8										
8	12.10 EV									



RELEASE CAMERA

* indicates the light level measured related to total metering range.

9 HASSELBLAD PME90

9.1 Basic set-up

Connect the battery compartment cable to the adapter 971 006. Connect the test cable and the battery connector to the PME90.

NOTE!

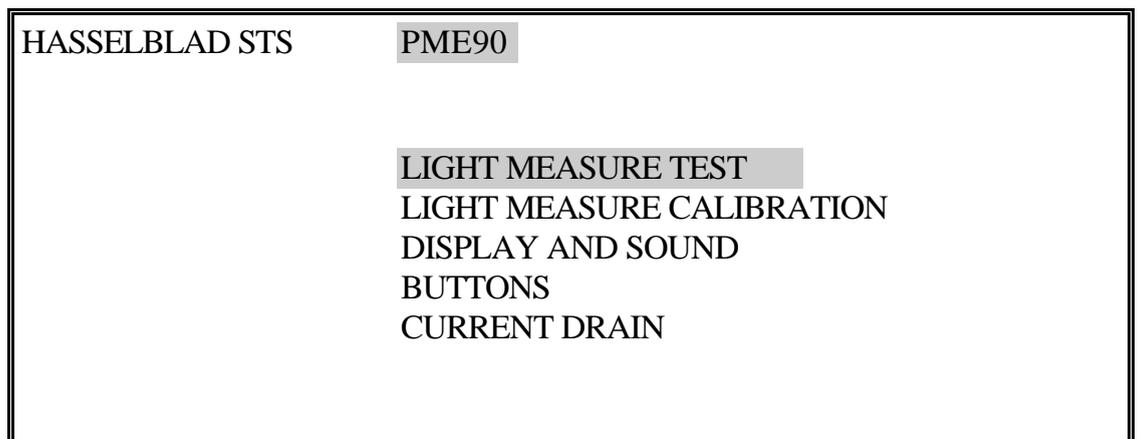
- * Use an Acute-Matte D focusing screen. (Code No. 42204).
Split image or micro prism focusing screen must not be used.
- * Use the tube 905 018 for incident light metering.
- * Push the PME90 all the way in when mounting it on the camera.
- * Use a 500 series camera and a CF80 or F80 lens. Using a 202/203/205 camera body will give an error of approx. 0.1 EV due to the partially transparent mirror and consequently are these cameras not recommended.
- * At low light levels ambient light may cause measuring error.
Use a black cover or dark room.
- * Keep the light source switched on for at least 5 minutes before calibrating.

NOTE! Lens on ∞

9.2 PME90 MENUS

When “PME90/45“ has been selected you’ll have to push the red metering button on the PME90 to enter test mode. Then the menu for PME90 will appear on the screen.

Example



9.3 ‘LIGHT MEASURE, TEST‘

You can choose between testing the spot & average measuring system or the incident light system.

Example

 LIGHT MEASURE, TEST

SPOT & AVERAGE LIGHT METERS
 INCIDENT LIGHT METER

9.3.1 SELECT LIGHT LEVEL

After selecting “SPOT & AVERAGE LIGHT METERS“ or “INCIDENT LIGHT METER“ you must first measure the light level from the light source.

Procedure:

Set the lens aperture at 2.8 (max.).

Set the lens/camera to B or C.

Attach the standard sensor onto the camera.

Put the camera in front of a light source.

Set the light source to desired value.

Press the camera release button and keep pressed to measure the light level of the light source. Each measurement is indicated by a short beep and corresponding LV/LL is displayed on the screen. Release the button after the first beep or keep pressed to make continuous measurements while adjusting the light level.

You can now read actual light value on the screen.

Example

 SELECT LIGHT LEVEL

Face lens to light source!

Do **not** remove the sensor!

Light source setting LL **12.7**

Recording

9.3.2 **“SPOT & AVERAGE LIGHT METERS“**

Testing the spot light meter and the average light meter.

Test procedure:

Remove the sensor from the camera and attach the PME90. LV/LL and deviation from light source setting is displayed continuously.

Press F1 to change light level.

Note! The camera must be tensioned.

The lens aperture must not be changed.

Press F1 if light level has been changed since last measurement, ref. to par. 9.3.1

* indicates the light level measured related to total metering range of the meter system.

Example

SPOT AND AVERAGE			
Do not change the light level! (Press F1 to change)			
SPOT		AVERAGE	
LL at f 2.8	12.9	LL at f 2.8	12.9
DEVIATION	-0.1 EV	DEVIATION	-0.1 EV
[-----*-----]		[-----*-----]	
Dark	Bright	Dark	Bright

9.3.3 **“INCIDENT LIGHT METER“**

Testing the incident light meter.

Test procedure:

Attach the incident light meter tube 905 018 in the PME90 accessory shoe. The tube must be used; otherwise the measurement will be invalid. Press the tube against the metering dome and light source respectively.

LV/LL and deviation from light source setting is displayed continuously.

Press F1 to change light level.

Note! Press F1 if light level has been changed since last measurement, ref. to par. 9.3.1

Example 2

CALIBRATION

Remove the sensor and attach the PME90 onto the camera

Press enter to continue

Now you can choose which meter you want to calibrate.

Note that the camera must be tensioned!

Example 3

CALIBRATION

CALIBRATE SPOT METER
CALIBRATE AVERAGE METER
CALIBRATE INCIDENT METER

To save the value you have to press Y. When saved you have to press the read measure button to re-enter the test mode.

Example 4

CALIBRATION

Deviation from previously stored value -0,17 EV

Do you really want to save the new calibrations values? [Y/N]

9.5 **“DISPLAY AND SOUND“**

A number of test patterns will appear on the screen. Compare patterns with enclosure 2.

Example

DISPLAY/SOUND

```

ALL SEGMENTS ON, BACKLIGHT ON
ALL SEGMENTS ON, BACKLIGHT OFF
PATTERN 1
PATTERN 2
ALL SEGMENTS OFF
BEEP [PRESS ENTER]

```

9.6 **“BUTTONS“**

Press the appropriate button. A star should appear on the screen while the button is pressed..

Example

BUTTONS

```

ISO  Fmax  Mode  Upper ^  Lower v  Backlight  Metering
*
```

9.7 **“CURRENT DRAIN“**

After this test you'll have to push the read measure button to reenter test mode.

Example

CURRENT DRAIN

Current drain 36.7 μ A

9.8 **Other functions**

F6 displays software revision number.

Pressing the keys Shift and F1 simultaneously in the main menu will reset the factory calibration values.

Note! This function should not be used if the electronics or any other part of the light measuring system has been replaced.

Also note that this function is not available for some of the first delivered PME90's. (Error E18 is displayed if not available).

10 HASSELBLAD PME45

10.1 Basic set-up

Connect the battery compartment cable to the adapter 971 006. Connect the test cable to the PME45. **Remove the battery from the PME45.**

NOTE!

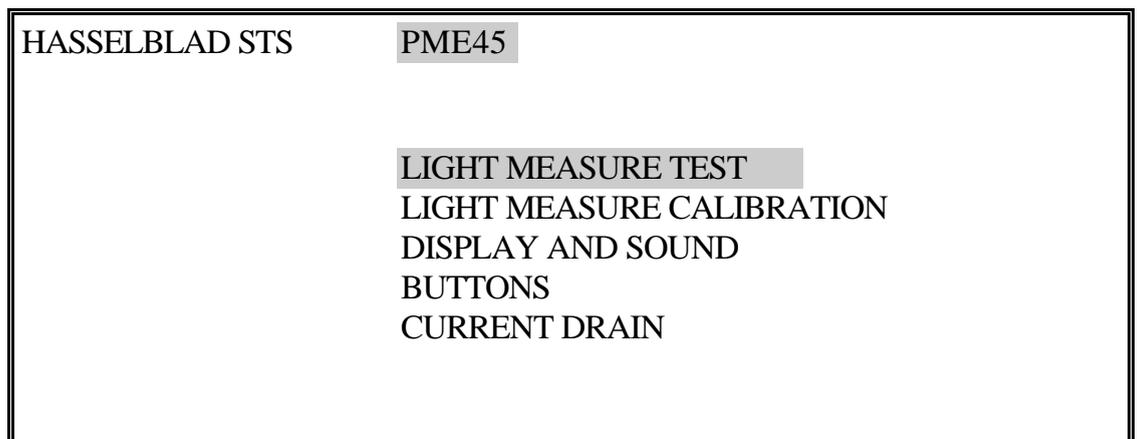
- * Use an Acute-Matte D focusing screen. (Code No. 42204).
Note! Split image or micro prism focusing screen must not be used.
- * Use the tube 905 018 for incident light metering.
- * Use a 500 series camera and a CF80 or F80 lens. Using a 202/203/205 camera body will give an error of approx. 0.1 EV due to the partially transparent mirror and consequently are these cameras not recommended.
- * At low light levels ambient light may cause measuring error.
Use a black cover or dark room.
- * Keep the light source switched on for at least 5 minutes before calibrating.

NOTE! Lens on ∞

10.2 PME45 MENUS

When “PME45/90“ has been selected you’ll have to push the red metering button on the PME45 to enter test mode. Then the menu for PME45 will appear on the screen.

Example



10.3 **‘LIGHT MEASURE, TEST‘**

You can choose between testing the spot & average measuring system or the incident light system.

Example

LIGHT MEASURE, TEST

SPOT & AVERAGE LIGHT METERS
INCIDENT LIGHT METER

10.3.1 **SELECT LIGHT LEVEL**

After selecting “SPOT & AVERAGE LIGHT METERS“ or “INCIDENT LIGHT METER“ you must first measure the light level from the light source.

Procedure:

Set the lens aperture at 2.8 (max.).

Set the lens/camera to B or C.

Attach the PME45 to the camera.

Attach the standard sensor onto the camera.

Put the camera in front of a light source.

Set the light source to desired value.

Press the camera release button and keep pressed to measure the light level of the light source. Each measurement is indicated by a short beep and corresponding LV/LL is displayed on the screen. Release the button after the first beep or keep pressed to make continuous measurements while adjusting the light level.

You can now read actual light value on the screen.

Example

SELECT LIGHT LEVEL

Face lens to light source!

Do **not** remove the sensor!

Light source setting LL **12.7**

Recording

10.3.2 **“SPOT & AVERAGE LIGHT METERS“**

Testing the spot light meter and the average light meter.

Test procedure:

When light level selection is done (10.3.1), tension the camera and press any key to confirm. LV/LL and deviation from light source setting is displayed.

**Note! The camera must be tensioned.
 The lens aperture must not be changed.**

* indicates the light level measured related to total metering range of the meter system.

Example

SPOT AND AVERAGE

Do not change the light level! (Press F1 to change)

SPOT		AVERAGE	
LL at f 2.8	12.9	LL at f 2.8	12.9
DEVIATION	-0.1 EV	DEVIATION	-0.1 EV
[-----*-----]		[-----*-----]	
Dark	Bright	Dark	Bright

10.3.3 **“INCIDENT LIGHT METER“**

Testing the incident light meter.

Test procedure:

Attach the incident light meter tube 905 018 in the PME45 accessory shoe. The tube must be used; otherwise the measurement will be invalid. Press the tube against the metering dome and light source respectively.

LV/LL and deviation from light source setting is displayed continuously. Press F1 to change light level.

Note! Press F1 if light level has been changed since last measurement, ref. to par. 10.3.1

Example 2

CALIBRATION

Tension the camera and press enter to continue.

Now you can choose which meter you want to calibrate.

Note that the camera must be tensioned!

Example 3

CALIBRATION

CALIBRATE SPOT METER
CALIBRATE AVERAGE METER
CALIBRATE INCIDENT METER

To save the value you have to press Y. When saved you have to press the read measure button to re-enter the test mode.

Example 4

CALIBRATION

Deviation from previously stored value -0,17 EV

Do you really want to save the new calibrations values? [Y/N]

10.5 **“DISPLAY AND SOUND“**

A number of test patterns will appear on the screen. Compare patterns with enclosure 2.

Example

DISPLAY/SOUND

```

ALL SEGMENTS ON, BACKLIGHT LOW
ALL SEGMENTS ON, BACKLIGHT NORMAL
ALL SEGMENTS ON, BACKLIGHT MEDIUM
ALL SEGMENTS ON, BACKLIGHT HIGH
PATTERN 1
PATTERN 2
ALL SEGMENTS OFF
BEEP [PRESS ENTER]

```

10.6 **“BUTTONS“**

Press the appropriate button. A star should appear on the screen while the button is pressed..

Example

BUTTONS

```

ISO  Fmax  Mode  Upper ^  Lower v  Metering
*

```

10.7 **“CURRENT DRAIN“**

After this test you'll have to push the read measure button to re-enter the test mode.

Example

CURRENT DRAIN

Current drain 36.7 μ A

10.8 **Other functions**

F6 displays software revision number.

Pressing the keys Shift and F1 simultaneously in the main menu will reset the factory calibration values.

Note! This function should not be used if the electronics or any other part of the light measuring system has been replaced.
(Error E18 is displayed if not available).

11 HASSELBLAD C/CF/CB/CFE/Cfi LENSES

11.1 General

The Service Test System can be used to measure shutter speeds on all above mentioned lenses for the Hasselblad system provided that you have the special C-shutter sensor (option).

Preferably use a 500 camera body (the 200 and 2000 models with speed ring in C-position will however also work in most cases). The system can also be used to measure shutter speeds on the SWC camera.

11.2 Basic set up

Connect the C-shutter sensor to the PC-board and fit to the camera body.

Fit the lens to the camera and place in front of the light source.

NOTE! Lens on and max aperture
Set the light source to approximately EE 12/LV 15.

11.3 Light level calibration

The C-shutter sensor has 16 measuring ranges to cover lenses with different maximum apertures without changing the level of the light source.

Keep the shutter open. Press any key to confirm

When "C/CF/CB/CFE/Cfi Lenses" is selected the screen will display:

Set the lens speed ring to B (or F) and keep the release button pressed while pressing any key. The system will now automatically select the best measuring range and "Light Calibration OK" will be displayed. Release the button to close the shutter.

The calibration procedure can be repeated any time by pressing "F1". This should be done when a new lens with different maximum aperture is used.

(The measuring range can also be changed manually with the arrow keys. Note that the LED-indicators on the sensor have the same function as for the standard sensor.)

11.4 Shutter speed measurement

If light level calibration is done correctly the screen will display:

RELEASE

Press the release button. For long speeds be sure to keep the button pressed until the shutter closes.

The measured speed is shown on the screen.

Note! Deviation (EV) is calculated from nearest step. This may differ from the speed ring setting. If so, the difference must be added to give correct deviation.

Example

Range: 11

SHUTTER

NOTE: Use max. aperture !

Measured shutter speed 129.75 ms Deviation 0.05 EV from speed 8 (125 ms)

RELEASE

12 HASSELBLAD WINDER CW

12.1 Basic set-up

Connect a battery pack or another power connection to the winder. Connect the test cable from the adapter box 970995 to the winder. Connect the serial cable from the adapter box to the COMport on the PC. Make sure that the winder is in the “L” position. For calibration the winder must be off camera.

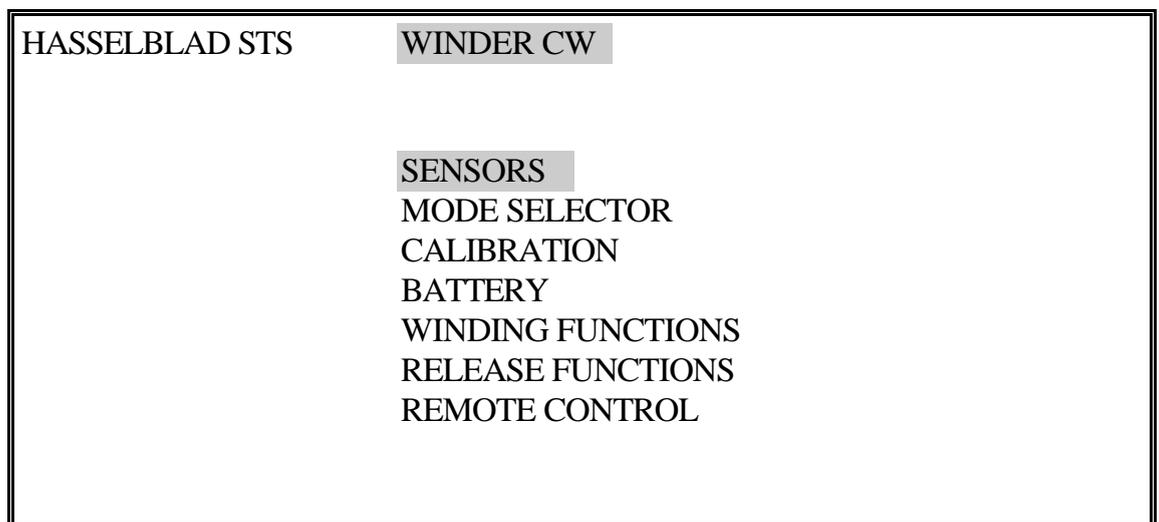
Default COMport number is 1. To change it choose System/Change Setting/WinderCW COMport. You can save it with System/Save Setting, see 13.5-6.

Note !

Do not press the winder release button while the test cable is connected.

12.2 Winder menus

When “WINDER” has been selected you’ll first be prompted to put the winder in L-position and then press ENTER. Then the menu for the winder will appear on the screen.



12.3 “SENSORS”

This function is a help for trouble shooting. It’s testing the status of the electrical sensors without performing the normal sequences.

Make sure the winder is off the camera.

The status for each sensor will be highlighted and between brackets.

Example

SENSORS

ON CAMERA:	[OFF]	0N
WINDING HOME:	0	[1]
WINDING COUNTER:	0	[1]
RELEASE HOME:	[0]	1
RELEASE COUNTER:	[0]	1

12.4 “MODE SELECTOR“

This tests the mode selector. The status will be highlighted and between brackets.

Example

MODE SELECTOR

R [L] S C M

12.5 “CALIBRATION“

There are three calibrations to be done. The potentiometers effect winding count sensor, release count sensor and the release arm position sensor. Make sure the winder is off the camera.

Example

CALIBRATION

CALIBRATE WINDING SENSOR
 CALIBRATE RELEASE SENSOR
 CALIBRATE RELEASE ARM
 SENSOR

12.5.1 “CALIBRATE WINDING SENSOR“

Calibration of the winding count sensor is done with RV3. The winding motor will rotate while testing. When calibrated properly the star will be inside the brackets. Make sure the winder is off the camera.

Example

CALIBRATION WINDING SENSOR

*[]
CALIBRATE WITH RV3

PRESS ANY KEY WHEN READY

12.5.2 “CALIBRATE RELEASE SENSOR“

The calibration of the release increment sensor is done with RV2. When calibrated properly the star will be inside the brackets. The release motor will rotate while testing. Make sure to keep the arm out during calibration. Make sure the winder is off the camera.

Example

CALIBRATION RELEASE SENSOR

[*]
CALIBRATE WITH RV2

PRESS ANY KEY WHEN READY

12.5.3 “CALIBRATE RELEASE ARM SENSOR“

The calibration of the release arm sensor is done with RV1. When calibrated properly the star will be inside the brackets. Make sure the winder is off the camera.

Example

CALIBRATION RELEASE ARM SENSOR

[*]

CALIBRATE WITH RV1

PRESS ANY KEY WHEN READY

12.6 “BATTERY“

This tests the battery condition both loaded and unloaded.
Note that the voltage reading is not available if battery is NOT OK.

Example

BATTERY

NO LOAD VOLTAGE : 6.9 V
LOAD VOLTAGE : 6.6 V
BATTERY OK/NOT OK : OK

12.7 “WINDING FUNCTIONS“

Choose between different sequences for the winding motor. In WINDUP you have to attach the winder to a camera.

Example

WINDING

BLIND WINDUP
CONSTANT SPEED WINDING
REVERSE MOTOR
CHECK NO. OF PULSES
WINDUP

12.8 “RELEASE FUNCTIONS“

Choose between different sequences for the release motor.

Example

RELEASE

REACTION TIME&POSITION
 CONSTANT MOTOR SPEED
 CHECK NO. OF PULSES
 RELEASE ARM IN/OUT
 RELEASE ARM SENSOR

12.9 “REMOTE CONTROL“

Put the winder on the camera. A remote control is needed.

You must keep the button on the remote control pressed when you press ↵ (ENTER). The actual mode will be highlighted and you get information on which address the remote control has. You also get information which RC address that is stored in the winder attached.

Example

REMOTE CONTROL

REMOTE CONTROL ADDRESS:	214 105 34
REMOTE CONTROL MODE:	SINGLE
 WINDER PROGRAMMED ADDRESS:	 214 105 34

12.10 Other functions

F1 - when in Winder CW Main Menu, displays total number of wind-ups.
 NOTE ! This function is only available from Winder software version 3. Also note that the number is only updated every 10 wind-ups.

F2 - when in Winder CW Main Menu, displays latest internal error number from the winder. Note that the number will remain in the winder until a new error is detected, even if the batteries are replaced. See 14, No W121-127 for more information.

F6 - when you are in Winder CW Main Menu, displays the Winder Software version number.

13 **EXIT**

Return to the main menu and press "ESC".

Answer "Y" or  to the question "Are you sure?" and the program is ended, or press any other key to get back to main menu.

14 TESTS AND MAINTENANCE

14.1 Automatic testing

An automatic system test is carried out when the program starts, i.e. parts or components of the PC-board and the sensor are tested. See 13.4 for further information.

14.2 Calibration

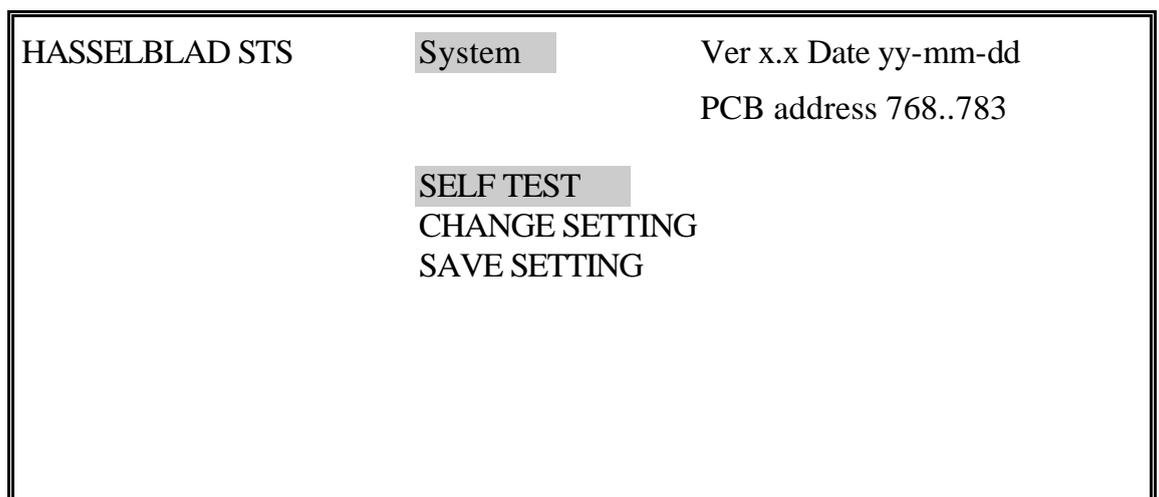
The PC-board is calibrated before delivery. Further calibration is normally not required.

Sensor and Extension Tube should be calibrated every two years, or after possible repairs. They may be calibrated independently of each other. Calibration should normally be carried out at the factory.

To assure a smooth operation, it is recommended to lubricate the key of the Extension Tube with Isoflex PDP48 oil (or similar) at least once a year.

14.3 System menus

When "System" has been selected from the main menu, the screen will show the menu for testing and adaptation of the STS. Version and date of the STS are shown in upper right corner. Also the selected address of the PC-board is shown.



Select function as in the main menu.
Press ESC to get back to the main menu.

14.4 **"SELF TEST"**

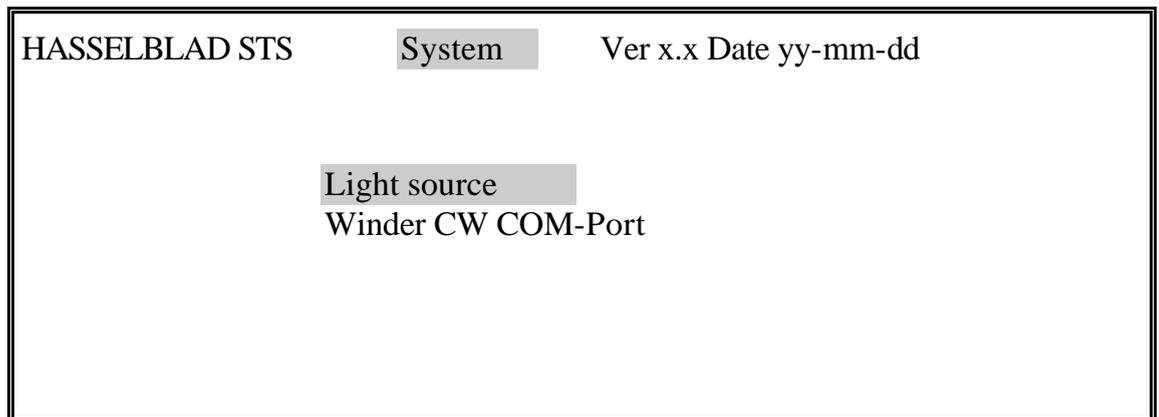
The sensor must be connected to the PC-board during the self-test. Do not connect any other device to the sensor or to the board. The sensor detectors should be covered.

If failed, check that the above conditions have been fulfilled. Correct and try again by pressing ↵.

The self-test does not check the PC-board and the sensor completely.

14.5 **"CHANGE SETTING"**

When "CHANGE SETTING" has been selected, the screen will show the menu for changing the test system.



Select function as in the main menu.

"Light source"

Select light source type as in the main menu. The information is used for selecting aperture when measuring shutter speed and for light colour compensation.

"Winder CW COM Port"

Use the → and ← keys to select the COM port to be used for the winder test cable.

14.6 **"SAVE SETTING"**

When "SAVE SETTING" has been selected the current set-up is stored onto the diskette (or the hard disk).

15

MESSAGES

E = Error W = Warning

M = Message

<u>No.</u>	<u>Statement</u>	<u>Error/Action</u>
M 5	Wrong. Try again	Erroneous key pressing.
M 6	Not implemented yet	Erroneous key pressing.
M 7	Not available now	Erroneous key pressing.
M 8	Test aborted	Erroneous key pressing.
M 9	Time out	Erroneous key pressing.
M 10	Already selected	Erroneous key pressing.
E 18	Invalid revision	Invalid camera software revision.
E 23	I2C time out in get	Release button not deactivated after exposure?
E 50	Address area check	Another PC-board has the same address?
E 59	Speed set to B	Set speed to time
E 60	Comm. Off	Communication error. Is the battery comp. connected?
E 61	Comm. Get port	Communication error. Is the battery comp. connected?
E 62	Comm. Put port	Communication error. Is the battery comp. connected?
E 63	Comm. Fork on	Communication error. Is the battery comp. connected?
E 64	Comm. Fork off	Communication error. Is the battery comp. cable connected?
W 65	Speed ring changed	Inapplicable change of shutter speed.

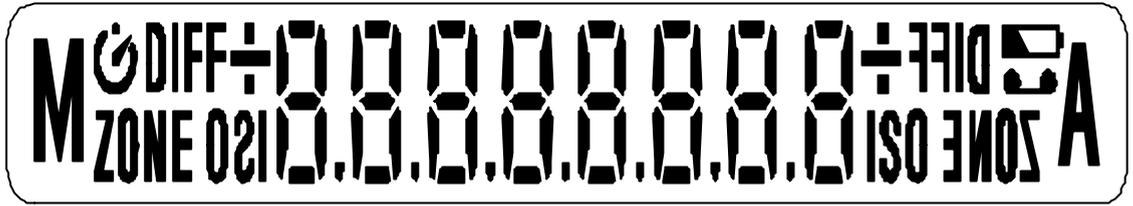
<u>No.</u>	<u>Statement</u>	<u>Error/Action</u>
W 66	Aperture changed	Inapplicable change of aperture.
W 67	Stop down changed	Inapplicable change of aperture.
W 70	Curtain sequence	Signals from sensor detectors are given in wrong order.
E 71	Light sensor 1	Erroneous/missing signal from outer right detector.
E 72	Light sensor 2	Erroneous/missing signal from inner detector.
E 73	Light sensor 3	Erroneous/missing signal from centre detector.
E 74	Light sensor 4	Erroneous/missing signal from inner left.
E 75	Light sensor 5	Erroneous/missing signal from outer left.
E 76	Light level high	Light level too high.
E 77	Light level low	Light level too low.
E 79	C position	Erroneous/missing signal from the extension tube.
E 80	Test back light	Erroneous/missing light value from the sensor.
E 81	Flash sync	Erroneous/missing flash sync.
E 82	Flash light	Erroneous/missing flash light value, sync. cable not connected or light level too low.
E 83	Fifo content	Inapplicable change of signal.
E 84	F lens connected	F type lens erroneously adapted.
E 85	Unstable light	Light level in light source not stable.
E 86	Light level too low	Light level in light source too low.

<u>No.</u>	<u>Statement</u>	<u>Error/Action</u>
E 87	Exposure too long	Shutter speed longer than 1.2 s
E 88	Open/close not found	The release button has not been pressed long enough for the shutter to close or the shutter opens or closes too slow.
E 89	Multiple signal	More than one shutter open/close is detected. This may be caused by electrical interference from the PC.
E 90	Comm. Get revision	Communication error of question about camera software.
E 91	Comm. Display	Communication error of writing to camera display.
E 93	Comm. Panel mode	Communication error of reading mode selector.
E 94	Comm. Panel buttons	Communication error of question about left side camera buttons.
E 95	Comm. Magazine	Communication error of reading E magazine dials.
E 96	Comm. Lens aperture	Communication error of reading F lens aperture.
E 97	Comm. Lens stop down	Communication error of reading F lens manual stop-down/max. aperture.
E 98	Comm. Speed ring	Communication error of reading shutter speeds.
E 99	Lens/Mag connected	Lens and/or magazine/sensor erroneously added to equipment.
E 103	Comm. Camera status	Communication error of question about camera status.
E 104	False light	The sensor detected extraneous light. (Or communication error.)

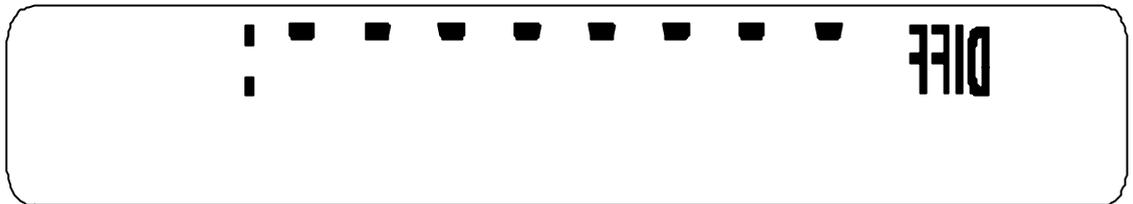
<u>No.</u>	<u>Statement</u>	<u>Error/Action</u>
E 107	Comm not established.	Check battery cable and test cable. Remove battery compartment cable. Wait min. 5 s, insert again.
W 108	LL not selected	Choose Select Light Level from menu.
E 112	Comm not established	Set mode L. Remove battery wait min. 5 s, insert battery again. Check selected COM-port (ref. 13.5). Note that this error may be caused by pressing the winder release button while the test cable is connected.
E 113	Winder is ON camera	Remove the winder from the camera.
W 114	Winder is OFF camera	Attach the winder to the camera.
W 115	Address file error	Files ADDR _x .STS have not been copied from the diskette or the system has not been updated for a new winder software revision.
W 116	RC Error	Remote controller code is not received. Aim the remote control at the winder. Check remote controller battery.
W 121	Wind-up error 1	End of film or cover plate in back
W 122	Wind-up error 2	On camera switch in wrong position.
W 123	Wind-up error 3	Release motor jammed.
W 124	Wind-up error 4	Release motor not in correct start position.
W 125	Wind-up error 5	Release counter exceeded maximum count.
W 126	Wind-up error 6	Winding motor jammed
W 127	Wind-up error 7	Load too heavy.

Encl. 1 DISPLAY TEST PATTERN TO 202/203/205

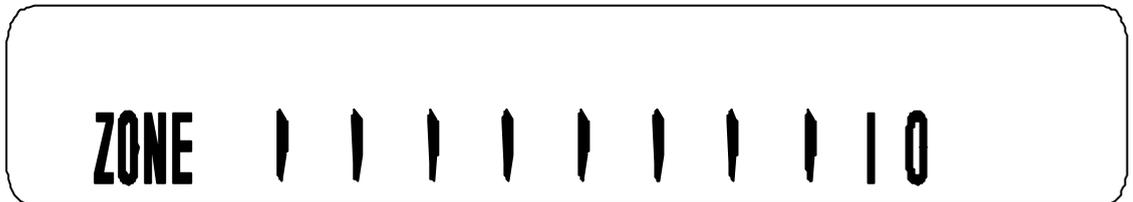
"All segments lit"



"Pattern 1"

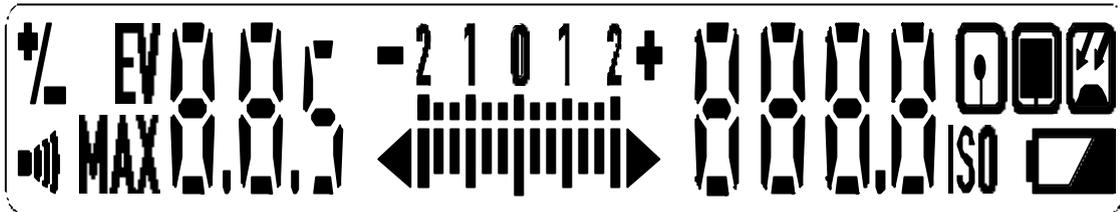


"Pattern 2"

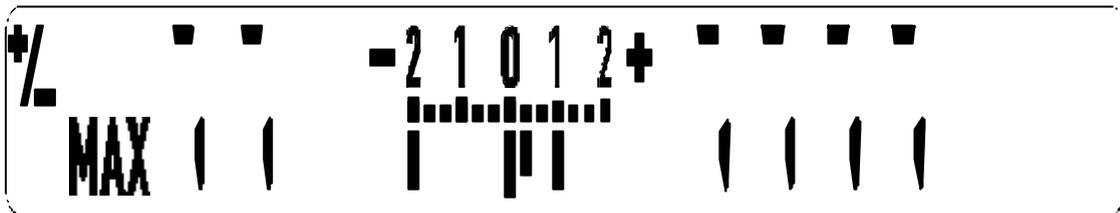


Encl. 2 DISPLAY TEST PATTERN TO PME45/90

"All segments lit"



"Pattern 1"



"Pattern 2"



Encl. 3 INSTALLATION**Requirements for PC**

The Hasselblad Service Test System has been designed to operate on computers like IBM/XT/AT and compatible. However, we have found that the system will not work on some computers claiming to be IBM-compatible. We therefore recommend that you check the following before buying.

Requirements: The I/O-bus read address signal has to be valid for at least 500 ns. One free full length ISA slot.

For some PC:s this is selectable from a “set-up menu“. If so, the requirement can normally be fulfilled by selecting a lower I/O-clock frequency or selecting an additional I/O read wait state.

If you can not get this information from your PC supplier we suggest that you try the system before buying. If the requirements are not fulfilled, the system will respond with a “failed“ at the “fifo“ part of the self test.

PC-board

WARNING! The PC-board is sensitive to electrostatic discharges. Always store it in the special wrapping. When handling it use ground connected wrist band.

Follow the PC Guide to Operations and install the PC-board accordingly. Note the following if other PC-boards are installed:

Check that the PC provides sufficient power. The max. consumption of the STS is:

<u>voltage</u>	<u>max. current</u>
+5 V	650 mA
-5 V	0 mA
+12 V	130 mA
-12 V	10 mA

Select a free address area with the jumpers S1 and S2 on the board:

<u>S1:1</u>	<u>S1:2</u>	<u>address area</u>	<u>remark</u>
jumper	jumper	768-783 (#300-30F)	default
open	jumper	784-799 (#310-31F)	
jumper	open	816-831 (#330-33F)	
open	open	912-927 (#390-39F)	

Encl. 4 **MISCELLANEOUS****Colour screen**

When started the Service Test System will automatically use colour text if a colour screen is connected. However, a PC using a monochrome EGA/VGA screen may be interpreted as having a colour screen with bad readability as result. This can be avoided by typing "VHABSTS M" to start the system.

External power for the Winder CW adapter

Normally, the Winder CW adapter will function with power from the PC. For some PC:s, however, an external adapter is required. Please contact Victor Hasselblad AB, Technical Support Department for more information.